



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/757,195

01/14/2004

James T. Aslanis

TI-27730A.1B

3583

23494 7590 04/03/2007
TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

FOTAKIS, ARISTOCRATIS

ART UNIT

PAPER NUMBER

2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

04/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/757,195

Applicant(s)

ASLANIS ET AL.

Examiner

Aristocratis Fotakis

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18 - 68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18 - 68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 01/14/2004, 10/19/2004
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: A typing informality has been observed (FEQ and decoder unit [36]) (Paragraph [0033], Line 7). Appropriate correction is required.

The disclosure is objected to because of the following informalities: The phrase "what is claimed" is missing in page 7. Appropriate correction is required.

The disclosure is objected to because of the following informalities: The Related U.S Application Data paragraph is objected because the continuation of application No.10/074,942 filed on February 11, 2002 is a continuation (CON) of 09/193,014 filed on November 16 1998 according to the filing receipt mailed on 04/19/2004. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 63 - 68 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 63, recites of weighting coefficients applied to one or more complex amplitudes of the receiving values of the synchronizing frame before correlating with the stored values of the synchronizing pattern to produce the comparison result. This is taught nowhere in the specification or the drawing. The specification and the drawing teach of applying weighting coefficients to the stored values before correlation and not to the complex amplitudes of the receiving values of the synchronization frame.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 18, 20 – 21 and 23 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 40 - 43 of U.S. Patent No. 5,901,180 in view of Dolan (US 5,386,590).

Re claims 18 and 33, claims 40 – 43 of reexamined patent (5,901,180 C1) recite of a method for transmitting a frame synchronization pattern utilizing a plurality of frequency tones (preamble, reexamined patent, Col 2, Lines 41 – 44), said method

Art Unit: 2611

comprising: obtaining a frame synchronization pattern (reexamined patent, Col 2, Line 48); grouping the pattern into pairs of binary values (reexamined patent, Col 2, Line 49); assigning a first pair of binary values to at least one subcarrier (*multicarrier modulation*) (reexamined patent, Col 2, Lines 53 - 55); mapping each of a plurality of remaining pairs of binary values to a complex amplitude (*energy levels*, Col 2, Lines 51 - 53); assigning each of the mapped pairs to a corresponding one of the frequency tones (Col 2, Lines 54 - 56); suppressing the amplitude of at least one of the frequency tones (Col 2, Lines 62 - 65); then modulating at least a subset of the frequency tones in accordance with the mapped pairs corresponding thereto to produce modulated frame synchronization data (Col 2, Lines 56 - 59); and transmitting the modulated frame synchronization data (Col 2, Lines 60 - 62).

However, claims 40 - 43 of reexamined patent (5,901,180 C1) do not specifically recite a second pair of binary values with a pilot tone, overwriting the second pair of binary values with values corresponding to constant complex amplitude for the pilot tone and a digital/analogue converter. Since this is a multicarrier modulation system, it is necessary for each symbol to contain a pilot for synchronization purposes and transmitted in the form of a constant amplitude. Dolan teaches of an apparatus and method for increasing data transmission rate over wireless communication systems using spectral shaping. In order to keep the gain of the limiter constant, a constant frequency, constant amplitude pilot tone signal is used at the high frequency end of the transmitted data signal (Col 19, Lines 20 - 28).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used a constant amplitude pilot tone so as to keep the gain constant.

Re claims 20, claims 40 – 43 of the patent (5,901,180) recite of the modulated frame synchronization data being a multicarrier symbol (Col 16, Lines 66 – 67).

Re claims 21, claims 40 – 43 of the patent (5,901,180) recite of the equations of the frame synchronization pattern (Col 17, Lines 7 – 10 to Col 8, Lines 1 – 8).

Re claims 23, claims 40 – 43 of the reexamined patent (5,901,180 C1) recites of allocating a bit loading for the plurality of frequency tones (Col 2, Lines 45 – 47); and wherein the suppressing step suppresses the amplitude of at least one of the plurality of frequency tones having a bit loading below a selected level (Col 2, Lines 60 – 65).

Claims 63 – 67 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 - 6 of U.S. Patent No. 6,912,261 in view of Cioffi et al. ("Modification to DMT Synchronization Pattern Insertion", Submission T1E1.4/93-089 to the T1E1.4 Working Group of Committee T1, listed in the IDS filed 1/9/04, "Cioffi" hereinafter).

Re claim 63, Claims 1 – 6 of patent (6,912,261) disclose a frame synchronizer for attaining frame synchronization in a multicarrier modulation transmission system (DMT, Col 12, Line 60) in which a synchronizing frame containing at least a synchronizing pattern (Col 12, Line 37) is transmitted in a multicarrier modulated signal, said method comprising: receiving values of the synchronizing frame, the received values corresponding to complex amplitudes associated with respective ones of a plurality of tones of the multicarrier modulated signal (Col 12, Lines 31 – 35); applying weighting coefficients to one or more of the complex amplitudes (Col 12, Lines 55 – 61); correlating the weighted complex amplitudes with corresponding stored values of the synchronizing pattern to produce a comparison result (*correlator*, Col 12, Lines 36 – 39); and comparing the comparison result with at least one threshold value (*predetermined value*) to provide an indication of existence or loss of frame synchronization (Col 12, Lines 41 – 50).

However, the claims of patent (6,912,261) do not disclose the synchronizing pattern corresponding to a set of j values chosen from a sequence of N values, and the equations that determine the N values.

Cioffi teaches the specified equations that define the synchronization pattern above in the T1E1.4/93-089 document (see page 2, section 2.1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the synchronization pattern defined by equations taught by the T1E1.4/93-089 document so as to conform to the standard.

Re claim 64, claims 1 – 6 of patent (6,912,261) disclose of the frame synchronizer determining an adjustment amount (*time shift*) to restore frame synchronization when the result of the comparing step (*comparing to a predetermined value*, Col 12, Lines 41 – 42) indicates that the frame synchronization has been lost; and adjusting a frame boundary in accordance with the adjustment amount to restore frame synchronization (Col 12, Lines 41 – 50).

Re claim 65, claims 1 – 6 of patent (6,912,261), a weighting multiplier is disclosed for applying a weighting coefficient to each of the one or more complex amplitudes corresponds to whether its associated tone is to contribute to the comparison result (Col 12, Lines 55 – 61).

Re claim 66, claims 1 – 6 of patent (6,912,261) further discloses of the weighting coefficient applied to complex amplitudes associated to a tone that is not to contribute to the comparison result is zero (Col 12, Lines 62 – 65).

Re claim 67, claims 1 – 6 of patent (6,912,261) further discloses of the the weighting coefficient applied to complex amplitudes associated to a tone that is to contribute to the comparison result is one (Col 12, Lines 66 – 67 to Col 13, Lines 1 - 2).

Claim 51 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 - 14 of U.S. Patent No. 5,901,180 C1 in view of Riccardi et al. (US 5,742,642).

Re claim 51, claims 1 – 14 of reexamined patent (5,901,180 C1) recite a method for transmitting a frame synchronization pattern utilizing a plurality of frequency tones (Col 1, Lines 24 – 26), said method comprising: obtaining a frame synchronization pattern (Col 1, Lines 27 – 29); grouping the pattern into pairs of binary values (Col 12, Lines 53 – 55); mapping each of a plurality of remaining pairs of binary values to a complex amplitude (Col 13, Lines 17 – 19); assigning each of the mapped pairs to a corresponding one of the frequency tones (Col 13, Lines 21 – 23); suppressing the amplitude of at least one of the frequency tones (Col 1, Lines 43 – 45); then modulating at least a subset of the frequency tones in accordance with the mapped pairs corresponding thereto to produce modulated frame synchronization data (Col 13, Lines 25 – 26); and transmitting the modulated frame synchronization data (Col 1, Lines 40 – 43).

However, the claims of patent (6,912,261) do not recite of assigning a first pair of binary values to d.c. and Nyquist subcarriers.

Riccardi teaches of a method for digitally demodulating a complex modulation signal and allowing different parameters to be transmitted thereby. The input signal is baseband filtered and a complex demodulation is performed on the first subcarrier at a frequency F_p to obtain a correction signal, after squaring. The input signal is

Art Unit: 2611

demodulated around a frequency exactly equal to twice the frequency of the first demodulation (*Nyquist*) in order to obtain output signals which exhibit a frequency error with respect to $2F_p$. This frequency error is corrected by multiplication with the previously derived frequency correction signal. The corrected signal is filtered at a frequency lower than 1 Hz, in order to obtain a signal giving the phase error at a *frequency 0*, that is to say that of the subcarrier at $2F_p$. The signal makes it possible to correct the phase of signals which were previously frequency corrected in order to obtain two signals which are complementary to one another and transmitted by quadrature modulation around the frequency $2F_p$ (Abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have isolated the dc and Nyquist component to obtain the zero offset (Col 5, Lines 15 -18).

Claim 33 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 - 14 of U.S. Patent No. 5,901,180 C1 in view of Riccardi et al. (US 5,742,642) and further in view of Dolan (US 5,386,590).

Re claim 33, claims 1 – 14 of reexamined patent (5,901,180 C1) recite a transmitter for communicating data using multicarrier modulation (Col 1, Lines 24 – 26), said transmitter comprising: a frame synchronization sequence source (Col 1, Lines 27 – 29) for producing a sequence of binary values, wherein each of a plurality of pairs of

the binary values defines a complex amplitude for an associated frequency tone in a frequency domain synchronizing frame multicarrier symbol (Col 13, Lines 17 – 19); circuitry for suppressing the complex amplitude of at least one of the frequency tones in the frequency domain synchronizing frame multicarrier symbol from that defined by its associated pair of binary values (Col 1, Lines 43 – 45); a modulator, for producing a time domain multicarrier symbol from the frequency domain synchronizing frame multicarrier symbol (Col 13, Lines 25 – 26).

However, the claims of patent (6,912,261) do not recite of assigning a first pair of binary values to d.c. and Nyquist subcarriers and a digital-to-analog converter for converting the time domain multicarrier symbol to an analog output signal.

Riccardi teaches of a method for digitally demodulating a complex modulation signal and allowing different parameters to be transmitted thereby. The input signal is baseband filtered and a complex demodulation is performed on the first subcarrier at a frequency F_p to obtain a correction signal, after squaring. The input signal is demodulated around a frequency exactly equal to twice the frequency of the first demodulation (*Nyquist*) in order to obtain output signals which exhibit a frequency error with respect to $2F_p$. This frequency error is corrected by multiplication with the previously derived frequency correction signal. The corrected signal is filtered at a frequency lower than 1 Hz, in order to obtain a signal giving the phase error at a frequency 0, that is to say that of the subcarrier at $2F_p$. The signal makes it possible to

Art Unit: 2611

correct the phase of signals which were previously frequency corrected in order to obtain two signals which are complementary to one another and transmitted by quadrature modulation around the frequency $2F_p$ (Abstract).

Dolan teaches of analogue transmission wherein for a cellular communication telephone link, the FAX modem (#210, Fig.2) is also used to convert the digital data output by the computer (#205) to analog data suitable for transmission (Col 8, Lines 52 – 55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have isolated the dc and Nyquist component to obtain the zero offset (Col 5, Lines 15 -18) and convert the digital signal to analogue to transmit the analogue signal for the benefit of better C/I performance.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aristocratis Fotakis whose telephone number is (571) 270-1206. The examiner can normally be reached on Monday - Thursday 7 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

AF

A. K. Asher

CHIEH M. FAN
SUPERVISORY PATENT EXAMINER